BEFORE DEPARTMENT OF WATER RESOURCES

STATE OF IDAHO

IN THE MATTER OF THE PETITION FOR DELIVERY CALL OF A&B IRRIGATION DISTRICT FOR THE DELIVERY OF GROUND WATER AND FOR THE CREATION OF A GROUND WATER MANAGEMENT AREA

Docket No.: 37-03-11-1

DIRECT TESTIMONY OF CHRISTIAN R. PETRICH, Ph.D. P.E., P.G.

SUBMITTED ON BEHALF OF:

THE IDAHO GROUND WATER APPROPRIATORS INC.
NORTH SNAKE GROUND WATER DISTRICT
MAGIC VALLEY GROUND WATER DISTRICT

JULY 16, 2008

LIST OF SPONSORED EXHIBITS

419	**Distribution of water-level declines having occurred between 1959 and 2006 and "water short" (Item-g) lands**	**Within Exhibit 400**
420	**Distribution of water-level declines having occurred between 1959 and 2006 and "water short" wells and "water short" (Item-g) lands**	**Within Exhibit 400**
421	**Reported well rectification costs**	**Within Exhibit 400**
422	**Contract between U.S. BOR and A&B**	**Appendix A to Exhibit 400**
423	**Transfer 72566**	**Appendix B to Exhibit 400**
424	**"Comingle.pdf"**	**Appendix C to Exhibit 400**
425	**Email correspondence from Matthew Anders, IDWR**	**Appendix D to Exhibit 400**
426	**Christian Petrich Resume**	**Appendix E to Exhibit 400**

DIRECT TESTIMONY OF CHRISTIAN PETRICH

I. INTRODUCTION

Q STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.

A My name is Christian R. Petrich, Ph.D., P.E., P.G. I am employed by SPF Water Engineering, LLC, 600 E. River Park Lane, Boise, ID 83706. I am a principal engineer/hydrologist and manager in the firm.

Q WHO ARE YOU TESTIFYING FOR?

A I am testifying as an expert witness on behalf of the Idaho Ground Water Appropriators, Inc., ("IGWA") and its Ground Water District Members (collectively "Ground Water Districts"). IGWA and the Ground Water Districts are at times collectively referred to as the "Ground Water Users." I began serving as a technical consultant and advisor to IGWA and the Ground Water Districts in November, 2007.

Q WHAT IS YOUR AREA OF EXPERTISE?

A I hold a Ph.D. in Geology from the University of Idaho. I earned my Masters of Science and Civil Engineering from Washington State University and a Bachelor of Science in Resource Conservation from the University of Montana. I am a licensed professional engineer, a licensed professional geologist, and a certified water rights examiner. I also have expertise in hydrogeology and hydrologic modeling. I have over 20 years of experience in this field of work. My current resume is included at the end of my testimony as Appendix E, (Exhibit 426).

Q HAVE YOU EVER BEEN TESTIFIED AS AN EXPERT WITNESS BEFORE?

A Yes. I have given expert testimony in administrative hearings before the Idaho Department of Water Resources in the matters dealing with water right applications 63-32089 and 63-32090 (City of Eagle), 63-32061 (SunCor Idaho, LLC). I have also provided expert testimony in numerous Planning and Zoning or County Commission hearings in Ada, Canyon, Gem, Owyhee, and Boise Counties and the City of Boise.

Q WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A The purpose of my testimony is:

1. To introduce **Exhibit 400** which constitutes my expert report and opinion in the matter of the Petition of the Delivery Call of A & B Irrigation District for the Delivery of Ground Water and for the Creation of a Ground Water Management Area;

2. To provide factual evidence pertinent to the administrative and judicial resolution of the water delivery calls made by A & B Irrigation District ("A&B");

3. To discuss A & B Irrigation District's water rights and diversion under water rights No. 36-2080;

4. To generally describe ground water levels and trends in the vicinity of A&B;

5. To describe the general history of A&B's well deepenings and replacements;

6. To discuss generally, the application of the Eastern Snake Plain Aquifer Ground Water Model and the A&B Scenario that resulted from that model; and

7. To provide technical recommendations to the Hearing Officer regarding future administration and management of the ESPA pertinent to this matter.

Q CAN YOU GENERALLY DESCRIBE THE INFORMATION YOU REVIEWED AND RELIED UPON IN PREPARING YOUR TESTIMONY?

A Yes. I reviewed most of the pleadings filed in this matter by the parties and the Director's 2008 Order. Also as set forth in the references to Exhibit 401, I have reviewed the Idaho Department of Water Resource's water right records and files relating to A & B, the agency record as provided by IDWR, documents and information provided by A&B, information from the Eastern Snake Plain Hydrologic Modeling Committee, numerous academic and agency reports and studies regarding the ESPA, the history of development on A & B specifically, and the water resources of the basin.

Q PLEASE SUMMARIZE YOUR CONCLUSIONS:

A Based on my analysis I have reached the following conclusions:

1. A & B has been able to meet the intended beneficial use under its water right 36-2080 even though it has diverted less than the authorized maximum of 1,100 cfs on its 62,604.3 acres. A&B uses an internal delivery standard of 0.75 inches per acre. But, a delivery rate of 5/8 (0.625) inch per acre has been deemed a minimum full supply sufficient to raise typical crops for other nearby irrigation entities (e.g., American Falls Reservoir District #2, the North Side Canal Company, and the Twin Falls Canal Company). The basis for this conclusion in discussed in Exhibit 401, Section 3.

2. The data supports the conclusion that A & B continues to provide sufficient water to meet its irrigation needs on a system-wide basis. A & B growers in Unit B, which is served by ground water, have not shifted to lower water consumption crops, have not fallowed land and have expanded irrigated acres. The basis for this conclusion in discussed in Exhibit 401, Section 3.3.

3. Although water levels declines have occurred in A & B, they have occurred as a result of (1) conversions from flood irrigation to sprinkler irrigation methods throughout the ESPA, (2) drought conditions, and (3) ground-water pumping by junior and senior water right holders including A & B. Declines have been exacerbated in portions of the A & B area, such as in the southwestern portion, as a result of local hydrogeologic conditions. The basis for these conclusion are discussed in Exhibit 401, Sections 3 and 4.

4. A & B is authorized to use additional wells and/or to interconnect its wells to provide water to its water users as it has done in some well systems.

5. There are several reasons to anticipate that ground-water level declines will moderate or possibly increase in the future. I base this conclusion on several factors: (1) effects of conversions of gravity to sprinkler irrigation will equilibrate, (2) there has been a ground water moratorium on new ground water development on the ESPA since 1992, (3) a likely eventual end to drought conditions, (4) water management on the ESPA aimed at maintaining and restoring discharge in the Thousand Springs Reach will contribute to stabilization of water levels, and (5) additional ESPA water management including those

being developed in the Comprehensive Aquifer Management Program. (See, Exhibit 401, Section 5).

6. From the mid to late 1950s it was anticipated that A & B would need to deepen and replace wells and in fact, the vast majority of these occurred in the early-1960s shortly after the original wells were drilled. Since 1994, A & B has only had to deepen or replace approximately 1.8 wells per year. (See Exhibit 401, Sections 2 and 5).

7. The application of the A&B Scenario, which was a simulation based upon the application of the Eastern Snake Plain Aquifer Model, is not appropriate for the administration of A&B's delivery call as concluded by the Director's 2008 Order. (See, Exhibit 401, Section 6).